

A Companion to the Philosophy of Technology

Edited by

Jan Kyrre Berg Olsen,
Stig Andur Pedersen and
Vincent F. Hendricks

)WILEY-BLACKWELL

A John Wiley & Sons, Ltd., Publication

Contents

Notes on Contributors	xi
Introduction	1
Part I History of Technology	5
1 History of Technology <i>Thomas J. Misa</i>	7
2 Definitions of Technology <i>Richard Li-Hua</i>	18
3 Western Technology <i>Kdd Nielsen</i>	23
4 Chinese Technology <i>Francesco. Bray</i>	28
5 Islamic Technology <i>Thomas F. Glick</i>	32
6 Japanese Technology <i>David Wittner</i>	37
7 Technology and War <i>Bart Hacker</i>	43
Part II Technology and Science	49
8 Technology and Science <i>Don Hide</i>	51
9 Science and Technology: Positivism and Critique <i>Bans Rodder</i>	61.
10 Engineering Science <i>Louis L. BucciareUi</i>	66

CONTENTS

11	Technological Knowledge <i>Antfonie W. M. Meyers and Marc j. de Vries</i>	70
12	The Interplay between Science and Technology <i>Bart Gremmen</i>	75
13	Instruments in Science and Technology <i>Mieke Boon</i>	78
14	Social Construction of Science <i>Harry Collins</i>	84
15	Social Construction of Technology <i>Wiebe E. Bijker</i>	88
16	Theory Change and Instrumentation <i>Joseph C. Pitt</i>	95
17	Biology and Technology <i>Keekok Lee</i>	99
18	Nuclear Technologies <i>William J. Nuttall</i>	104
19	Engineering Design <i>Peter Kroes</i>	112
20	Cybernetics <i>Andrew Pickering</i>	118
21	Chemistry and Technology <i>Felge S. Kragh</i>	123
Part III	Technology and Philosophy	129
22	Introduction: Philosophy and Technology <i>Veil TJusek</i>	131
23	Semiotics of Technology <i>Robert E. Innis</i>	141
24	Critical Theory of Technology <i>Andrew Feenberg</i>	146
25	Cyborgs <i>Evan Selinger</i>	154
26	Simulation <i>Evan Selinger</i>	157
27	Technology as "Applied Science" <i>Robert C. Scharff</i>	160
28	Technological Artifacts <i>Peter-Paul Verbeek and Pieter E. Vermaas</i>	165

29	Technical Practice <i>Bart Gremmen</i>	172
30	Technological Pragmatism <i>Larry Flickman</i>	175
31	Hermeneutics and Technologies <i>Don Hide</i>	180
32	Analytic Philosophy of Technology <i>Maarten Franssen</i>	184
33	Technological Rationality <i>Lorenzo C. Simpson</i>	189
34	Phenomenology and Technology <i>Iain Thomson</i>	195
35	Expertise <i>Evan Selinger</i>	202
36	Imaging Technologies <i>Don Hide</i>	205
37	The Critique of the Precautionary Principle and the Possibility for an "Enlightened Doomsaying" <i>jean-Pierre Dupuy</i>	210
38	Technology and Metaphysics <i>Jean-Pierre Dupuy</i>	214
39	Large Technical Systems <i>Erik van der Vleuten</i>	218
40	Sociotechnical Systems <i>Maarten Franssen and Peter Kroes</i>	223
41	Information Technology <i>Luciano Floridi</i>	227
Part IV Technology and Environment		233
42	Technology and Environment <i>Mary Tiles</i>	235
43	The Precautionary Principle <i>Andy Stirling</i>	248
44	Boundary-work, Pluralism and the Environment <i>Jozef Keulartz</i>	263
45	Global Warming <i>Sir John Houghton</i>	270

CONTENTS

46	The Reinvention of CO ₂ as Refrigerant for Both Heating and Cooling <i>Jan Hurlen</i>	276
47	Environmental Science and Technology <i>Mary Tiles</i>	280
48	Agriculture and Technology <i>John R. Porter and Jesper Rasmussen</i>	285
49	The Built Environment <i>Christian lilies</i>	289
PartV Technology and Politics		295
50	Technology and Politics <i>Evan Selinger</i>	297
51	The Idea of Progress , <i>Daniel Sarewitz</i>	303
52	Technology and Power <i>Daniel Sarewitz</i>	308
53	Technology and Culture <i>Lucien Scubla</i>	311
54	Technology Management <i>Richard Li-Flua</i>	316
55	Technology Strategy <i>Richard Li-Hua</i>	321
56	Technology and Globalization <i>David M. Kaplan</i>	325
57	Technology Transfer <i>Evan Selinger</i>	329
58	Technology and Capitalism <i>David M. Kaplan</i>	333
59	The Politics of Gender and Technology <i>Elisabeth K. Kelan</i>	338
60	European Politics, Economy and Technology <i>Erik Jones</i>	342
61	Asian Politics, Economy and Technology <i>Keekok Lee</i>	347
62	US Politics, Economy and Technology <i>David M. Hart</i>	353
63	Energy, Technology and Geopolitics <i>John R. Fanchi</i>	359

Part VI Technology and Ethics	365
64 Technolog}' and Ethics: Overview <i>Carl Miteham and Katinka Waelbers</i>	367
65 Agriculture.Ethics <i>David M. Kaplan</i>	384
66 Architecture Ethics <i>Warwick A. Fox</i>	387
67 Biomedical Engineering Ethics <i>Philip Brey</i>	392
68 Bioethics <i>Paul B. Thomson</i>	397
69 Biotechnology: Plants and Animals <i>Bart Gremmen</i>	4.02
70 Computer Ethics <i>Philip Brey</i>	406
71 Consumerism <i>Edward J. Woodhouse</i>	412
72 Development Ethics <i>Thomas Kesselring</i>	416
73 Energy Ethics <i>Kirsten Halsnms</i>	422
74 Engineering Ethics <i>Christelle Didier</i>	426
75 Environmental Ethics <i>Thomas Sebirk Petersen</i>	433
76 Food Ethics <i>David M. Kaplan</i>	439
77 Future Generations <i>Jesper Ryberg</i>	442
78 Genethics <i>Ms Holtwj</i>	445
79 Technology and the Law <i>Richard Susskind</i>	449
80 Media Ethics <i>Dem Elliott</i>	452
81 Medical Ethics <i>Seren Holm</i>	455

CONTENTS

82	Nanoethics <i>John Weckert</i>	459
83	Nuclear Ethics <i>Koos van der Bmggen</i>	462
84	Religion and Technology <i>Carl Miteham</i>	466
85	Technology and Personal Moral Responsibility <i>Jesper Ryberg</i>	474
86	Value-sensitive Design <i>Jeroen van der Hoven and Noemi Manders-Huits</i>	477
Part VII Technology and the Future		481
87	Technology, Prosperity and Risk <i>Sven Ove Hansson</i>	483
88	World Risk Society <i>Ulrich Beck</i>	495
89	Risk Analysis <i>Sven Ove Hansson</i>	500
90	Prosperity and the Future of Technology <i>William Sims Bainbridge</i>	502
91	Converging Technologies <i>William Sims Bainbridge</i>	508
92	Nanotechnology <i>Alfred Nordmann</i>	511
93	Energy Forecast Technologies <i>John R. Fanchi</i>	517
94	Biotechnology <i>Jennifer Kuzma-</i>	523
95	Transportation <i>Jonathan L. Gifford</i>	532
96	Global Challenges <i>Jennifer Kuzma</i>	538
97	Chemicals <i>Bruce E. Johansen</i>	546
98	The Future of Humanity <i>Nick Bostrom</i>	551
Index		558